**MA 110-01-1: Pre-Calculus**
**School of Natural Sciences & Mathematics**
Chaminade University Honolulu
**Fall 2024 / 3 Credits**
**Monday, Wednesday, Friday 10:30 – 11:20 am**
**Brogan Hall 101**


| | | | |
|---|---|---|---|
| **Instructor:** | Dr. Travis Mukina | **Office Location:** | Brogan 132 |
| **Email:** | travis.mukina@chaminade.edu | **Cell Phone:** | (814) 450-8134 |


**Learning Materials**

- **Desmos App**: A free graphing calculator app.
- **GroupMe App**: A way to stay up-to-date with all class announcements, assessments, and questions between you, your professor, and your classmates.
- **Canvas Student App**: A way to submit all assessments and check progress on mastery of course learning outcomes when necessary.
- **Google Drive/3-Ring Binder**: This should comprise of self-made graphic organizers, provided guided notes, Building Thinking Classroom Activities, and assessments.

**Course Catalog Description**
This course provides a foundation for further study in mathematics and prepares for Calculus I. Topics include functions and their graphs, polynomial and rational functions, exponential and logarithmic functions, trigonometric functions and their inverses, and some other selected topics.

**Course Overview**
This course is designed to produce better conceptual understanding of functions and mathematics in general that leads into understanding procedural understanding of formulas. A strong development of number relationships also occurs from class discussions, sharing of ideas, and thought-provoking assessments.

**Marianist Values**
This class represents one component of your education at Chaminade University of Honolulu. An education in the Marianist Tradition is marked by five principles and you should take every opportunity possible to reflect upon the role of these characteristics in your education and development:

1. Education for formation in faith
2. Provide an integral, quality education
3. Educate in family spirit
4. Educate for service, justice and peace
5. Educate for adaptation and change

**Native Hawaiian Values**
Education is an integral value in both Marianist and Native Hawaiian culture. Both recognize the transformative effect of a well-rounded, value-centered education on society, particularly in seeking justice for the marginalized, the forgotten, and the oppressed, always with an eye toward God (Ke Akua). This is reflected in the ʻOlelo Noʼeau (Hawaiian proverbs) and Marianist core beliefs:

1. Educate for Formation in Faith (Mana) E ola au i ke akua (ʻŌlelo Noʻeau 364) May I live by God
2. Provide an Integral, Quality Education (Naʼauao) Lawe i ka maʻalea a kūʻonoʻono (ʻŌlelo Noʻeau 1957) Acquire skill and make it deep
3. Educate in Family Spirit (ʻOhana) ʻIke aku, ʻike mai, kōkua aku kōkua mai; pela iho la ka nohana ʻohana (ʻŌlelo Noʻeau 1200) Recognize others, be recognized, help others, be helped; such is a family relationship
4. Educate for Service, Justice and Peace (Aloha) Ka lama kū o ka noʻeau (ʻŌlelo Noʻeau 1430) Education is the standing torch of wisdom
5. Educate for Adaptation and Change (Aina) ʻAʻohe pau ka ʻike i ka hālau hoʻokahi (ʻŌlelo Noʻeau 203) All knowledge is not taught in the same school

**Program Learning Outcomes [PLOs]**

| | |
|---|---|
| **PLO 1** | To demonstrate the understanding and skills in reading, interpreting, and communicating mathematical concepts which are integrated into other disciplines or appear in everyday life |
| **PLO 2** | To gain understandings of, and practical skills in logical thinking, deductive and inductive reasoning |
| **PLO 3** | To articulate the understanding of more advanced mathematical concepts and computational skills to support the study of other disciplines, including skills with numeric, analytic, and graphical methods |
| **PLO 4** | Where relevant, to develop mathematical maturity to undertake higher-level studies in mathematics and related fields |

**Course Learning Outcomes [CLOs]**

| | |
|---|---|
| **CLO 1** | Recall and explain the definition of a function, their graphs, their properties, operations, and transformations. |
| **CLO 2** | Recognize quadratic functions, analyze their behavior, and use their properties to solve equations and real-world problems. |
| **CLO 3** | Recognize polynomial functions, analyze their behavior, and use their properties to solve equations and real-world problems. |
| **CLO 4** | Recognize rational functions, analyze their behavior, and use their properties to solve equations and real-world problems. |
| **CLO 5** | Recognize exponential functions, analyze their behavior, and use their properties to solve equations and real-world problems. |
| **CLO 6** | Recognize logarithmic functions, analyze their behavior, and use their properties to solve equations and real-world problems. |
| **CLO 7** | Use trigonometric functions to explain right triangle trigonometry, construct the unit circle, and solve trigonometric equations. |
| **CLO 8** | Describe and evaluate limits to prepare for Calculus. |
| **CLO 9** | Contribute to a building thinking classroom by proactively participating in daily in-person activities. |

**Alignment of Learning Outcomes**

| | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 | CLO 7 | CLO 8 | CLO 9 |
|---|---|---|---|---|---|---|---|---|---|
| **Marianist Values** | 2, 5 | 2, 5 | 2, 5 | 2, 5 | 2, 5 | 2, 5 | 2, 5 | 2, 5 | 2, 5 |
| **PLOs** | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 | 1, 2, 3, 4 |

*What is the Point of Math Class?*

Collaboration
Communicate Thoughts & Ideas
Creativity
Critical Thinking

**Assessment**
This course is designed to contribute in a different and significant way to your knowledge and experience relative to diagnosis and remediation of mathematics. Always be prepared to effectively participate in class discussions, analyze the thinking of others in class, and clearly explain your thinking. A mastery rubric is provided with every assessment. Feedback on all assessments is provided within 7 days of submission.

1. **Participation Assignments**
   Assessed: Week 1
   - There are two different assignments, both described on Canvas, which contribute to your overall participation in this course: joining our class GroupMe with an initial post and a mathematical beliefs questionnaire

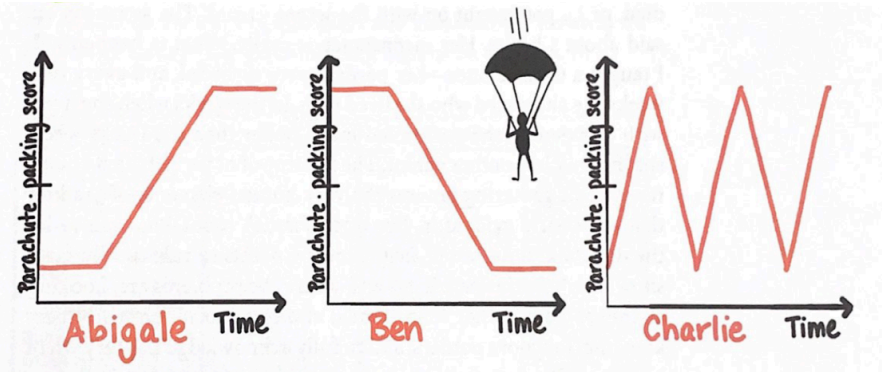
2. **Building a Thinking Classroom** **[CLO 9]**
   Assessed: Every In-Person Class
   - Every day you attend in-person class, you are expected to contribute to our building thinking classroom activities by communicating effectively with your classmates to solve various mathematical situations. You must be in class before the building thinking activity begins to be assessed.

3. **Written Assessments** **[CLO 1, 2, 3, 4, 5, 6, 7, 8]**
   Assessed: Week 3, 6, 10, 14
   - These assessments focus on Course Learning Outcomes (CLOs) demonstrated in the building thinking classroom activities and strategies used in your Check for Understanding. A full class period is provided to master multiple CLOs in a written communication format. All written assessments must be completed or a passing grade cannot be earned in the course.

4. **Verbal Assessments** **[CLO 1, 2, 3, 4, 5, 6, 7, 8]**
   Assessed: Week 7 & 15
   - These assessments focus on Course Learning Outcomes (CLOs) demonstrated in the building thinking classroom activities and strategies used in your Check for Understanding. A 10-minute designated time slot is provided to master one CLO in a verbal communication format. All verbal assessments must be completed or a passing grade cannot be earned in the course.

5. **Optional Written Assessments** **[CLO 1, 2, 3, 4, 5, 6, 7, 8]**
   Assessed: Week 7 & 15
   - These assessments focus on Course Learning Outcomes (CLOs) demonstrated in the building thinking classroom activities and strategies used in your Check for Understanding. A full class period is provided to master multiple CLOs in a written communication format.

| How Many CLOs Demonstrate Mastery? | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **9** | **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1** | **0** |
| A | A | B | C | D | F | F | F | F | F |



**Kōkua ʻIke: Tutoring & Learning Services**
Chaminade is proud to offer free, one-on-one tutoring and writing assistance to all students. Tutoring and writing help is available on campus at Kōkua ʻIke: Center for Student Learning in a variety of subjects (including, but are not limited to biology, chemistry, math, nursing, English, etc.) from trained Peer and Professional Tutors. Please check Kōkua ʻIke's website for the latest times, list of drop-in hours, and information on scheduling an appointment. Free online tutoring is also available via TutorMe. Tutor Me can be accessed 24/7 from your Canvas account. Simply click on Account > TutorMe. For more information, please contact Kōkua ʻIke at tutoring@chaminade.edu or 808-739-8305.

## Course Policies

**Attendance Policy**
Students are expected to attend regularly all courses for which they are registered. Students should notify their instructors when illness or other extenuating circumstances prevents them from attending class and make arrangements to complete missed assessments. Notification may be done by contacting the instructor via a direct message on GroupMe. It is the instructor's prerogative to modify deadlines of course requirements accordingly.
Any student who stops attending a course without officially withdrawing may receive a failing grade. Unexcused absences equivalent to more than a week of classes may lead to a grade reduction for the course. Any unexcused absence of two consecutive weeks or more may result in being withdrawn from the course by the instructor, although the instructor is not required to withdraw students in that scenario. Repeated absences put students at risk of failing grades.
Federal regulations require continued attendance for continuing payment of financial aid. When illness or personal reasons necessitate continued absence, the student should communicate first with the instructor to review the options. Anyone who stops attending a course without official withdrawal may receive a failing grade or be withdrawn by the instructor at the instructor's discretion.

**Late Work Policy**
Always accepted, but feedback may be delayed.

**Grades of Incomplete**
This policy on incomplete grades aligns with the same University policies.

**Instructor and Student Communication**
Questions for this course can be sent through a direct message on the GroupMe app. Online and/or in-person meetings can be arranged. Response time will take place up to 24 hours.

## Important Information

**Academic Honesty**
Academic honesty is an essential aspect of all learning, scholarship, and research. It is one of the values regarded most highly by academic communities throughout the world. Violations of the principle of academic honesty are extremely serious and will not be tolerated.
Students are responsible for promoting academic honesty at Chaminade by not participating in any act of dishonesty and by reporting any incidence of academic dishonesty to an instructor or to a University official. Academic dishonesty may include theft of records or examinations, alteration of grades, and plagiarism, in addition to more obvious dishonesty.
Questions of academic dishonesty in a particular class are first reviewed by the instructor, who must make a report with recommendations to the Dean of the Academic Division. Punishment for academic dishonesty will be determined by the instructor and the Dean of Academic Division and may include an "F" grade for the work in question, an "F" grade for the course, suspension, or dismissal from the University.
For the most up to date information, please refer to the Academic Honesty Policy on the Chaminade University Catalog website.

**Title IX and Nondiscrimination Statement**
Chaminade University of Honolulu is committed to providing a learning, working and living environment that promotes the dignity of all people, inclusivity and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator.

**Nondiscrimination Policy & Notice of Nondiscrimination**
Chaminade University of Honolulu does not discriminate on the basis of sex and prohibits sex discrimination in any education program or activity that it operates, as required by Title IX and its regulations, including in admission and employment. Inquiries about Title IX may be referred to the University's Title IX Coordinator, the U.S. Department of Education's Office for Civil Rights, or both and contact information may be found at the Chaminade University Title IX Office Contact Information and Confidential Resources website. On-campus Confidential Resources may also be found here at CAMPUS CONFIDENTIAL RESOURCES.
The University's Nondiscrimination Policy and Grievance Procedures can be located on the University webpage at: https://chaminade.edu/compliance/title-ix-nondiscrimination-policies-procedures/.
To report information about conduct that may constitute sex discrimination or make a complaint of sex discrimination under Title IX, please refer to the Campus Incident Report form. Chaminade University of Honolulu prohibits sex discrimination in any education program or activity that it operates. The NOTICE of NONDISCRIMINATION can be found here: Notice of Nondiscrimination.

**CUH Alert Emergency Notification**
To get the latest emergency communication from Chaminade University, students' cell numbers will be connected to Chaminade's emergency notification text system. When you log in to the Chaminade portal, you will be asked to provide some emergency contact information. If you provide a cell phone number, you will receive a text from our emergency notification system asking you to confirm your number. You must respond to that message to complete your registration and get emergency notifications on your phone.

**Assessment for Student Work**
With the goal of continuing to improve the quality of educational services offered to students, Chaminade University conducts assessments of student achievement of course, program, and institutional learning outcomes. Student work is used anonymously as the basis of these assessments, and the work you do in this course may be used in these assessment efforts.

**Student with Disabilities Statement**
Chaminade University of Honolulu offers accommodations for all actively enrolled students with disabilities in compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, and the ADA Amendments Act (2008).
Students are responsible for contacting Kokua Ike: Center for Student Learning to schedule an appointment. Verification of their disability will be requested through appropriate documentation and once received it will take up to approximately 2–3 weeks to review them. Appropriate paperwork will be completed by the student before notification will be sent out to their instructors. Accommodation paperwork will not be automatically sent out to instructors each semester, as the student is responsible to notify Kokua Ike via email at ada@chaminade.edu each semester if changes or notifications are needed.

**Credit Hour Policy**
This is a three-credit hour course requiring 135 clock hours of student engagement, per the official CUH Credit Hour Policy.

| Clock Hour Category | Total Time (hours) |
|---|---|
| Seat Time | 37.5 |
| | |
| Remaining Hours<br>• Mini Lectures<br>• Big Ideas Notes<br>• Check for Understanding | 97.5 |
| | |
| *Remaining Hours / 15 Weeks* | *6.5 hours/week* |

# COURSE SCHEDULE

| **CLO #**<br>Dates | **Content** | **Assessments** |
|---|---|---|
| **Algebra Review**<br>Aug 19 - 25 | Algebra Review<br>• Fractions & Proportions<br>• Properties of Exponents<br>• Factoring Polynomials<br>• Linear Functions, Models, & Equations | • Mathematical Beliefs Questionnaire<br>• GroupMe Registration<br>• ✔️ for Understanding |
| **CLO 1**<br>Aug 26 - Sept 8 | Functions and Their Graphs<br>• Functions<br>• The Graph of a Function<br>• Library of Functions & Piecewise Functions<br>• Transformations of Functions<br>• Operations & Composition of Functions<br>• One-to-One & Inverse Functions | • ✔️ for Understanding |
| **CLO 2**<br>Sept 9 - 15 | Quadratic Functions<br>• Properties of Quadratic Functions<br>• Zeros of Quadratic Functions<br>• Applications of Quadratic Functions | • ✔️ for Understanding<br>• Written Assessment #1 |
| **CLO 3**<br>Sept 16 - 22 | Polynomial Functions<br>• Properties of Polynomial Functions<br>• Zeros of Polynomial Functions<br>• Applications of Polynomial Functions | • ✔️ for Understanding |
| **CLO 4**<br>Sept 23 - 29 | Rational Functions<br>• Properties of Rational Functions<br>• Asymptotes of Rational Functions<br>• Applications of Rational Functions | • ✔️ for Understanding<br>• Written Assessment #2 |
| **Assessment Week**<br>Sept 30 - Oct 6 | Verbal Assessment #1: Sept 30<br>Verbal Assessment #2: Oct 2<br>Optional Written Assessment #1: Oct 4 | |
| **CLO 5**<br>Oct 7 - 13 | Exponential Functions<br>• Properties of Exponential Functions<br>• Exponential Equations<br>• Applications of Exponential Functions | • ✔️ for Understanding |
| **CLO 6**<br>Oct 14 - 27 | Logarithmic Functions<br>• Relationship between Exponential & Logarithmic Functions<br>• Properties of Logarithms<br>• Logarithmic Equations<br>• Applications of Logarithmic Functions | • ✔️ for Understanding<br>• Written Assessment #3 |
| **CLO 7**<br>Oct 28 - Nov 10 | Trigonometric Functions<br>• Angles & Their Measure<br>• Right Triangle Trigonometry<br>• Special Right Triangles<br>• The Unit Circle<br>• The Inverse Sine, Cosine, & Tangent Functions<br>• Trigonometric Equations | • ✔️ for Understanding |
| **CLO 8**<br>Nov 11 - 24 | Limits<br>• Limits with Tables & Graphs<br>• One-Sided Limits<br>• Limits with Algebra<br>• Infinite Limits | • ✔️ for Understanding<br>• Written Assessment #4 |
| **Assessment Week**<br>Nov 25 - Dec 1 | Verbal Assessment #3: Nov 25<br>Verbal Assessment #4: Nov 27 | |
| **Finals Week**<br>Dec 2 - 6 | Optional Written Assessment #2: Dec 2 | |